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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ERIC MONTFORT, CEDRIC SALENC,
XAVIER ROSER and LOIC GAUDIC

Appeal 2009-003764
Application 10/687,585
Technology Center 3600

Decided: January 13, 2010

Before LINDA E. HORNER, JOHN C. KERINS, and STEVEN D.A.
McCARTHY, *Administrative Patent Judges*.

KERINS, *Administrative Patent Judge*.

DECISION ON REQUEST FOR REHEARING

Appellants request rehearing of the decision entered September 29, 2009 (“Decision”). In that Decision, rejections of claims 8, 10, 12, and 13 under 35 U.S.C. § 102(b), and of claims 4-7, 9, 11 and 14-16 under 35 U.S.C. § 103(a) were affirmed.

Requests for Rehearing are limited to matters misapprehended or

overlooked by the Panel in rendering the original decision. 37 C.F.R. § 41.52(a)(1). Appellants' Request asserts that, in affirming the rejections of the claims on appeal, the Panel misapprehended the disclosure of the Heiberg patent (US 5,944,761, issued Aug. 31, 1999), and overlooked evidence in the form of the previously-cited Markley reference that Appellants contend supports their position with respect to the Heiberg patent.

The issue presented initially on appeal and now in Appellants' Request is whether the Heiberg patent inherently discloses the claim element of "an attitude regulation loop including a *corrector such that the bandwidth of said loop contains the lowest and most energetic frequencies of the flexible modes*" of elongated members disposed on a geostationary satellite. (Appeal Br., Claims Appendix)(emphasis added).

Appellants' first contention is that the Decision focused on language found in Heiberg to the effect that the corrector therein operates to null disturbance frequencies which are "known and constant", and that simply establishing that a frequency is known and constant is not sufficient to establish that the claimed corrector of the attitude correction loop having the recited bandwidth is disclosed by Heiberg. (Request 2). The focus or emphasis of the paragraph in the Decision in which the "known and constant" discussion appears was primarily that Heiberg discloses that its system is intended to null or damp *frequencies* of disturbances [plural], whereas Appellants contended that the Heiberg system "only discloses that the control loop would include the frequency [singular] ω_d , which does not include the lowest and most energetic frequency." (Appeal Br. 12). Similarly, Appellants contended that "Heiberg discloses the frequency

rejection system 10 in FIG. 1 as an example for compensation disturbances of a fixed frequency [singular] With respect to such a fixed frequency rejection system, Heiberg does not even address the issue of operating such a system in different frequency bands.” (Reply Br. 5).

The Decision further emphasized that Heiberg disclosed that those frequencies were “known and constant” to indicate: (1) that the Panel did not agree with Appellants’ further contention that, “Heiberg is concerned only with dealing with vibrations which change frequency with time” (Appeal Br. 12); and (2) that Heiberg discloses the correction circuit to be operable to null the known and constant disturbance frequencies. In combination with the disclosure elsewhere in Heiberg evidencing that flexible modes of elongated members were disturbances of the type to be corrected by the circuit, the latter point was found to support the Examiner’s contention that the lowest and most energetic frequencies of the flexible modes would necessarily be included in the bandwidth of the corrector, otherwise it would not function as intended.

Appellants’ above contentions directed to the alleged disclosure of correcting for disturbances of only a single frequency, and to the alleged disclosure of correcting only for vibrations that change frequency over time, were Appellants’ main contentions purporting to evidence that Heiberg could not be construed as inherently disclosing the claimed element involving a bandwidth including the lowest and most energetic frequencies. Finding the contentions to be unsupported by, and even contradicted by, the portions of the Heiberg disclosure relied on by the Examiner, we were not persuaded that the Examiner erred in finding that Heiberg inherently discloses the claimed subject matter at issue.

Appellants' second contention is that the statement at page 12 of the Decision that, "in order to function properly *in its bandwidth*, Heiberg needs only to make sure that the compensator recognizes frequencies in its bandwidth" (Decision 12), misapprehends the point at issue and "has nothing to do with the question of whether the frequencies are the lowest and most energetic frequencies, as claimed." (Request 2-3). This is essentially the point being made in the Decision. The statement quoted above from page 12 of the Decision initially appeared as a contention in Appellants' Reply Brief (Reply Br. 8), and was identified in the Decision as Appellants' contention. The Decision simply noted that this characterization of Heiberg was not inconsistent with the Examiner's finding that the Heiberg device necessarily includes the lowest and most energetic frequencies in its corrector bandwidth, and the characterization was thus (impliedly) not persuasive of error in the Examiner's position. Appellants' more direct statement in the Request that one has nothing to do with the other further reinforces that the argument fails to show error in the Examiner's position.

Appellants' third contention is directed to Judge McCarthy's concurring opinion, in which Judge McCarthy found that the Examiner had adequately established that the Heiberg patent was sufficiently similar from a structural standpoint to the claimed invention so as to shift the burden to Appellants to establish that the claim element at issue, noted as being recited in the claims in functional form, was not inherent in the Heiberg patent. (Request 3). Appellants argue that while Judge McCarthy's statement of the law is correct, it presumes a fact not in evidence, namely that Heiberg does not describe, expressly or inherently, the claim element at issue. (*Id.*). Appellants' argument misses the mark. Judge McCarthy's concurring

opinion noted that, with the burden having been shifted to Appellants to establish by evidence that the claim element was not inherent, Appellants had presented no such evidence and had thus not carried their burden of showing that the claim element at issue was not inherent.

Appellants' final contention is that the Decision overlooked an argument made by Appellants directed to the Markley reference^{1,2}, to the effect that Markley evidences that not including the lowest and most energetic frequencies in a control loop bandwidth is a possibility, thus negating any finding of inherency. (Appeal Br. 14). Notwithstanding the omission of a discussion of this argument in the Decision, the argument was considered, but was found to not be persuasive.

Appellants contend that the Markley reference teaches a bandwidth in which the lowest and most energetic frequencies are avoided. (Request 3; Appeal Br. 14). In their Appeal Brief, this was argued as evidencing that a control system did not necessarily need to include the lowest and most energetic frequencies, and thus a finding of inherency was improper. (Appeal Br. 14). Appellants attempt to go one step farther in the Request, asserting that the avoidance of the lowest and most energetic frequencies evidences that those frequencies would not have been used by a person of ordinary skill in the art, and that the person of ordinary skill in the art would have excluded the lowest and most energetic frequencies from the

¹ F.L. Markley et al., *Attitude Control System Conceptual Design for Geostationary Operational Environmental Satellite Spacecraft Series*, Journal of Guidance, Control, and Dynamics, Vol. 18, No. 2, March-April 1995.

² The Markley reference is not presently relied upon in any rejection of the claims.

bandwidth. (Request 3). We need not entertain these belated contentions, as they were not raised in the Appeal Brief or the Reply Brief. 37 CFR 41.52(a)(1) (2009).

Appellants' characterization of the Markley disclosure fails to tell the whole story. Markley indeed teaches a bandwidth in which the lowest and most energetic frequencies of the flexible modes are avoided, as Appellants contend. Markley, however, also teaches a bandwidth provided expressly to encompass the lowest and most energetic frequencies, and to correct for disturbances occurring at these frequencies. More specifically, Markley discloses a spacecraft controller system having a bandwidth of 0.1 Hz, whereas the first significant flexible mode of the solar array is disclosed as being expected to be between 0.5 and 1.0 Hz. (Markley, p. 250, col. 2, ll. 10-11 and ll. 18-20). Markley further discloses "a spacecraft motion compensation system to attenuate disturbances of frequencies between the [spacecraft] controller bandwidth and 5 Hz, since they would cause spacecraft jitter if unattenuated." (*Id.* at p. 250, l. 46-p. 251, l. 2). The former maintains spacecraft pointing by reaction wheel control, while the latter repoints the instrument mirrors to compensate for attitude errors brought about by the disturbance frequencies in its bandwidth (0.1-5 Hz), which include the frequency (0.5-1 Hz) of at least the expected first (lowest frequency) significant flexible mode of the solar array. (*Id.* at p. 247, ll. 20-26).

Thus, Appellants' contention is limited to what Markley calls the spacecraft controller or pointer system. That system is not concerned with, and specifically avoids, attempting to correct for disturbances at the lowest and most energetic frequencies of the flexible modes of the elongated

members. Inasmuch as the Heiberg control system relied upon by the Examiner operates to compensate for disturbances such as those resulting from vibrations of flexible elongated members, so as to maintain a fixed pointing direction of a spacecraft (Heiberg, col. 1, ll. 11-29; col. 2, ll. 31-64), the relevance of the Markley spacecraft controller or pointer system as evidencing anything regarding a lack of inherency in the Heiberg control system, has not been established by Appellants.

To the extent that Appellants are contending that the bandwidth of the Markley spacecraft controller is relevant to what Heiberg inherently discloses because both involve pointing the spacecraft, as noted above, Markley avoids contending with the frequencies of the flexible modes, leaving that to a mirror repointing system. Heiberg, in contrast, directly and expressly accounts for the flexible modes of the elongated members in its control system. (*Id.*). Again, Appellants have failed to establish how the bandwidth of the Markley spacecraft controller evidences that Heiberg might not or would not include a bandwidth as claimed by Appellants. Markley addresses the problem of disturbances caused by flexible modes in a completely different manner than does Heiberg. If anything, Markley's mirror repointing system evidences that it was known to those of ordinary skill in the art that compensation for disturbances in a frequency bandwidth that encompasses the lowest and most energetic frequencies of the flexible modes should be undertaken. This buttresses the Examiner's contention that the Heiberg control system must necessarily have a bandwidth encompassing these frequencies, lest it would not perform its intended function.

We have carefully reviewed Appellants' Request for Rehearing. We

have granted the Request to the extent that Appellants' arguments have been considered, and to the extent that we have introduced an analysis of Appellants' argument directed to the Markley reference, but we deny the Request with respect to making any changes in the decision to affirm the extant rejections of the pending claims.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2007).

REHEARING DENIED

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